SIDE-POWER
Thruster Systems

PJC321, PJC322
PJC321-L, PJC322-L
PJC321-MCL2, PJC322-MCL2
S-link
Control Panel

Keep this manual onboard !

EN Installation and user's manual
v 1.0.6

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CE

Made in Norway

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DECLARATION OF CONFORMITY

CE

We, Sleipner Motor AS
P.O. Box 519
N-1612 Fredrikstad, Norway

declare that this product with accompanying standard remote control systems complies with the essential health and safety requirements according to the Directive 89/336/EEC of 23 May 1989 amended by 92/31/EEC and 93/68/EEC.

PJC321, PJC322
Control panel with S-link™ CAN-bus connection

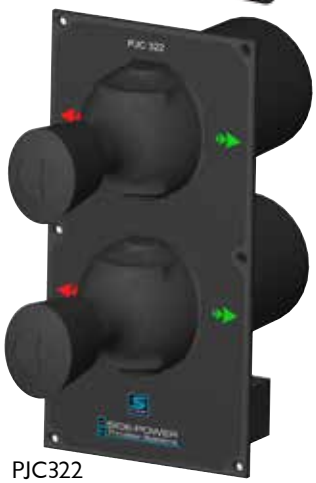
Product features

- For proportional thruster control with the S-Link controlled Hydraulic Thrusters
- Back-lit LCD display with instant feedback
  - System status
  - Amount of thrust & direction of thrust
  - Oil temperature & pressure
- Interactive multi-language menus
- CAN-Bus communication with thrusters and accessories
- Plug & play cables, waterproof and compact connectors
- Diagnostics via panel
- Connector for external "buzzer"/loud audible alarms
- Choose between:

PJC321-L/PJC322-L

PJC321-MCL2/PJC322-MCL2

PJC321



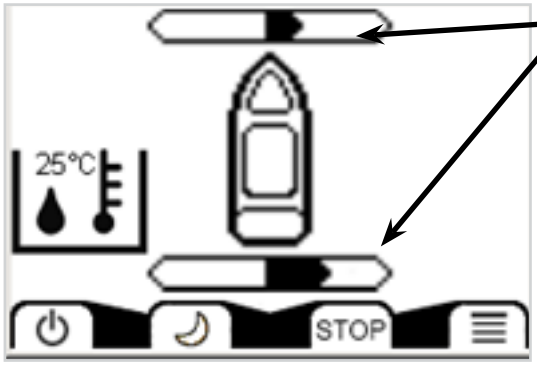
PJC322

DO NOT connect any other control equipment to the S-link controlled products except Side-Power original S-link products or via a Side-Power supplied interface product made for interfacing with other controls. Any attempt to directly control or at all connect into the S-link control system without the designated and approved interface, will render all warranties and responsibilities for the complete line of Side-Power products connected void and null. If you are interfacing by agreement with Sleipner and through a designated and approved interface, you are still required to also install an original Side-Power control panel to enable efficient troubleshooting if necessary

DISPLAY IN NORMAL USE:

1 hydraulic tank

Oil Temperature

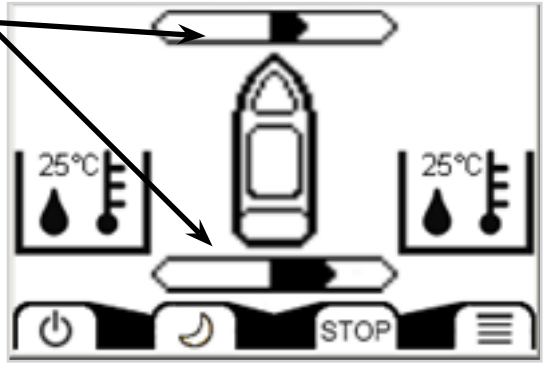


Thrust power and direction

2 hydraulic tanks

Oil Temperature, Port Tank

Oil Temperature, Starboard Tank



Buttons/Indications on screen - left to right:
ON/OFF - DAYTIME/NIGHT Backlight mode - EMERGENCY STOP - SETTINGS MENU

Technical specifications

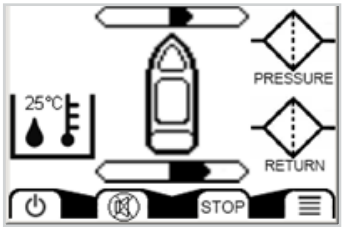
Description	Value
Supply Voltage	9-63 Vdc/6.5 Watts
Operating temperature	–40°C to +70°C [–40°F to +158°F]
Storage temperature	–40°C to +85°C [–40°F to +176°F]
IP Rating	IP67 above panel
EMC tested	Acc. to EN 13309, ISO 14982, ISO 13766
ESD tested	Acc. to EN 61000-4-2, ISO 7637-2
Power	9-63 Vdc / 6.5 Watts
EMC/ESD	100V/m/15kV
Vibration/Shock	3g/50g
External Alarm Buzzer Current	0.5A Maximum
Weight	250 g [0.5 lb]

Display Warnings & Alarms

PANEL

FILTER MONITORING WARNINGS (IF SENSORS ARE INSTALLED)

PRESSURE FILTER:
Pressure filter symbol (upper right) will blink when filter change is due. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated.



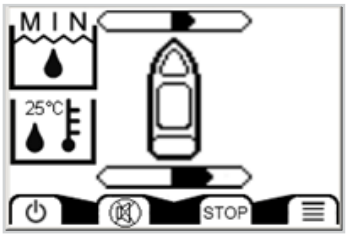
RETURN FILTER:
Return filter symbol (lower right) will blink when the filter needs to be replaced. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated.

The external buzzer can be muted by pressing the button under the loudspeaker symbol.
Warnings will be reset when the filter are replaced.

The thrusters can be run while the warnings is displayed.
(Filter warnings will not be shown on systems with two oil tanks)

ALARMS (Systems with one oil tank)

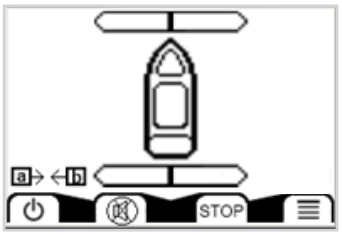
OIL LEVEL:
Oil level symbol (upper left) will blink when oil level is low. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated.
The alarm will be reset automatically when the oil level is OK



OIL TEMPERATURE:
Oil temperature symbol (lower left) will blink when temperature is above 75°C. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated. The alarm will be reset automatically when temperature goes below 65°C

The thrusters can be run when the oil alarms are active.

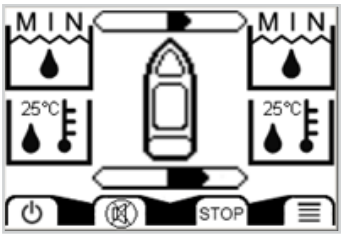
COMMUNICATION ERROR: a→ ←b
If there is a communication error between the panel and the system control unit located on the oil tank, the comm error symbol will be shown on the lower left side of the panel



The external buzzer can be muted by pressing the button under the loudspeaker symbol.

ALARMS (Systems with two oil tanks)

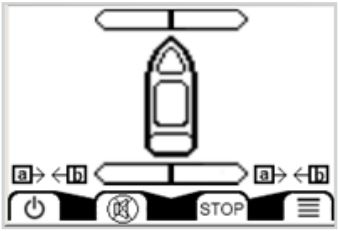
OIL LEVEL:
Oil level symbol (upper left/right) will blink when oil level is low.
In addition red LEDs on both sides of the panel will blink and the external buzzer is activated.
The alarm will be reset automatically when the oil level is OK



OIL TEMPERATURE:
Oil temperature symbol (lower left/right) will blink when temperature is above 75°C. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated. The alarm will be reset automatically when temperature goes below 65°C.

The thrusters can be run when the oil alarms are active.

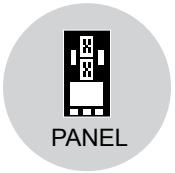
COMMUNICATION ERROR: a→ ←b
If there is a communication error between the panel and the system control unit located on the oil tank, the communication error symbol will be shown on the lower left/right side of the panel



Symbols on left side indicates port tank, symbols on right indicates starboard tank.

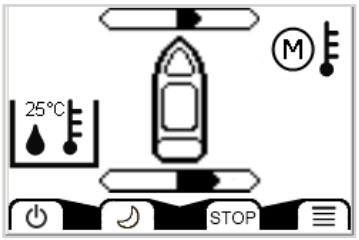
The external buzzer can be muted by pressing the button under the loudspeaker symbol.

Display Warnings & Alarms

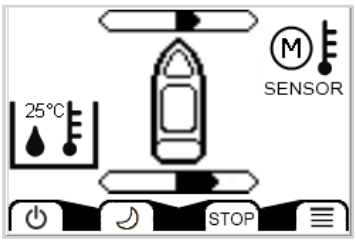


AC MOTOR ALARMS

HYDRAULIC AC MOTOR POWER PACK OVERTEMP:
The overtemp symbol will show in the upper right corner of the display when the AC motor temperature is above 120°C and automatically reset when temperature goes below 110°C.



HYDRAULIC AC MOTOR POWER PACK TEMP SENSOR:
The AC motor temp sensor fail symbol will show in the upper right corner if the system is set up with an hydraulic AC motor power pack and the sensor has an open circuit.



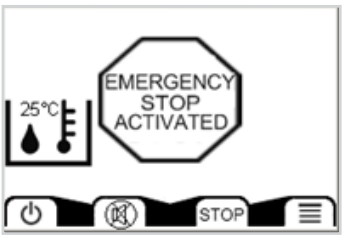
EMERGENCY STOP

When the STOP button is pressed, the hydraulic dump valve will activate and the thrusters will stop. On systems with two oil tanks, dump valves on both tanks will activate and all thrusters will stop.

The EMERGENCY STOP ACTIVATED symbol will be shown on the display. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated.

NB: FOR EMERGENCY STOP ONLY!

Press STOP again to reactivate the hydraulic system.

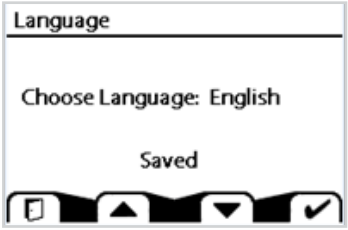


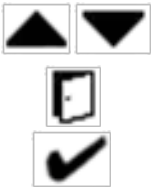
The external buzzer can be muted by pressing the button under the loudspeaker symbol.

Menu System

Access menu system by pressing menu button and hold it for 3 seconds

SETTINGS
The menu system contains of 5 settings:
1 - Language
2 - Display Settings
3 - Automatic OFF time
4 - Control Setup
5 - Panel Postition





Select settings

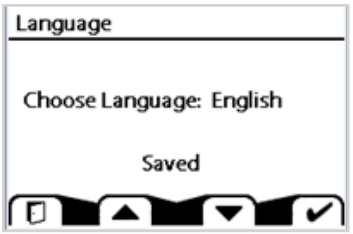
Exit settings

Choose function

Menu System

PANEL

1/5 Language
Choose between English or Norwegian.
The setting will not affect other panels in the system.

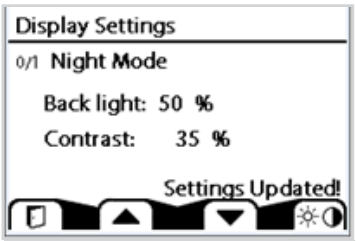


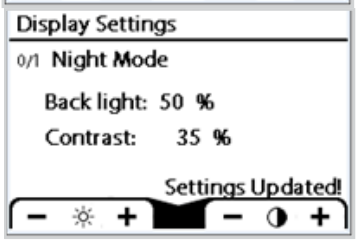
2/5 Display settings
Set contrast and backlight level for Daytime/Night modes
Settings will not affect other panels in the system.

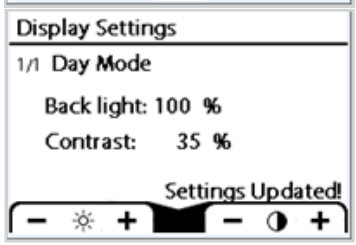
Press ☼◑ to start adjustment - Press + or - to adjust contrast or backlight.

Use ▲▼ to switch between daytime or night settings.
Exit setting by pressing ⎕

Adjustments will automatically end after 3 seconds of inactivity.







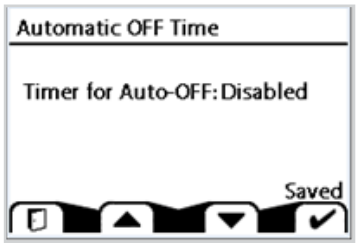
3/5 Automatic OFF time
Set time from last activity to Panel automatically turns off.
The time can be set at 5 minutes interval, ranging from 5 to 60 minutes - or be disabled. When "Disabled" is selected, the panel will never be turned off automatically.

Settings will not affect other panels in the system.

Press ▲▼ to adjust time in 5 minutes intervals.

Exit setting by pressing ⎕

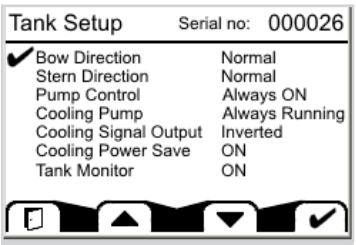
Store settings by pressing ✔

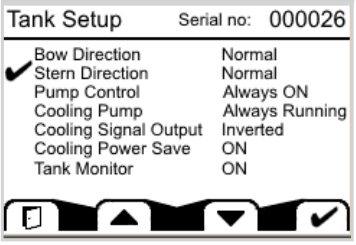


4/5 Control Setup

1.1 Bow/Stern Direction:
Values: Normal (default)/Inverted

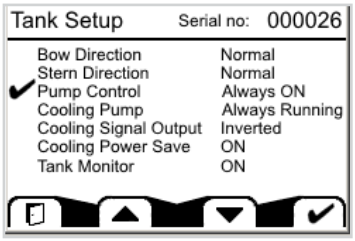
Switches between Normal and Inverted
running direction for the thruster.
Direction need to be inverted if incorrect prop rotation.





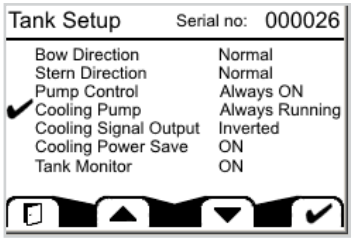
PANEL

1.2 Pump Control (PTO Mounted Pump)
Values: Power Save(default)/Always ON



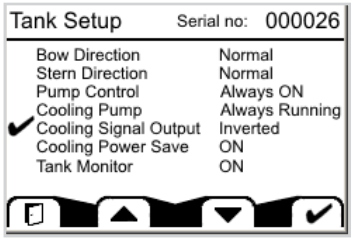
When «Pump Control» is set to « Power Save», the system will automatically control load sharing between two PTO pumps by deactivating the secondPTO pump when not needed (two PTO pumps/ control valves required) to reduce heat generation in the system and save fuel/energy. When any thruster is running, both PTO pumps will be active to ensure good performance. When an SPS stabilizer system is active, one PTO pump will be deactivated to save power. If stabilizers are active and the system pressure drops below 80bar, the system will activate the second PTO pump for 15 minutes to increase the flow capacity and maintain required pressure. After 15 minutes the second pump will be deactivated unless the pressure is still below 80 bar.
"Pump Control" settings has no effect when "Thruster Stern" is set to "W/Bypass Valve".
NOTE: "Pump Control: Auto" must only be used on PHC 024 with firmware V.1.008 or higher!

1.3 Cooling Pump
Values: Temp Controlled(default) / Always Running



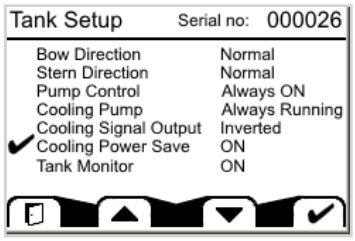
When the option "Temp Controlled" is selected, the cooling pump will start when oil temperature exceeds 50°C/122°F and stop when the oil temperature goes below 40°C/104°F. On systems with two oil tanks, this setting will apply to both tanks.

1.4 Cooling Signal Output
Values: Normal (default)/Inverted



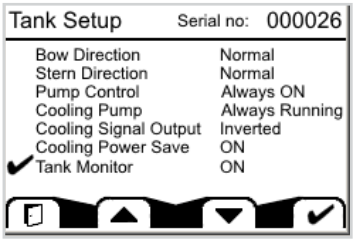
Set to Normal when using a hydraulic cooling pump.
Should be set to Inverted when using an electrical cooling pump with a 10 2380A-12/24V relay box.

1.5 Cooling Power Save
Values: ON (default)/OFF



ON sets the Cooling Pump into power save mode, which means the Cooling Pump output is dropping to 0 volt when the oil pressure is below 10 bar for more than 10 seconds (Cooling Pump is turned OFF).

1.6 Tank Monitor
Values: ON (default)/OFF

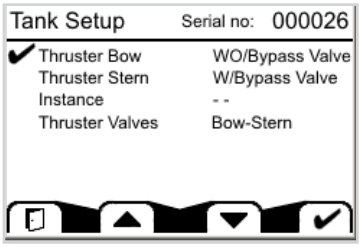


ON is when you have a tank monitor, oil level and Oil temp sensor. OFF is when you do not have a tank monitor and the display will show 0°C and no alarm for high temperature or low level will not be transmitted on the S-link.

PANEL

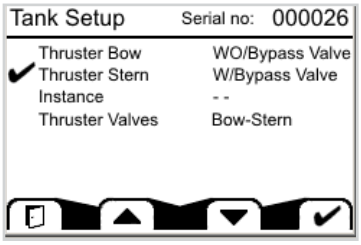
1.7 Thruster Bow (only available for PHC024 FW with V1.105 or higher)
Values: WO/Bypass Valve (default)/ W/Bypass Valve

All 513mm (20inch) tunnel and 610mm (24inch) tunnel thrusters, are supplied with hydraulic bypass/crossover valve and must be set to "W/Bypass Valve".
This bypass valve is normally open to protect the thruster during deceleration and will close while thruster is running.
By selecting "W/Bypass Valve" you activate this signal and addition change ramp parameters to match this setup.
All other thrusters must be set to "WO/Bypass Valve".



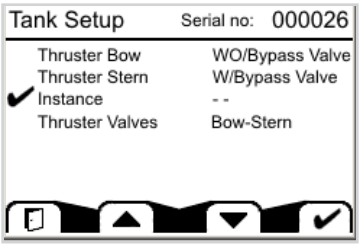
1.8 Thruster Stern (only available for PHC024 with FW V1.105 or higher)
Values: WO/Bypass Valve (default)/ W/Bypass Valve

All 513mm (20inch) tunnel and 610mm (24inch) tunnel thrusters, are supplied with hydraulic bypass/crossover valve and must be set to "W/Bypass Valve". This bypass valve is normally open to protect the thruster during deceleration and will close while thruster is running.
By selecting "W/Bypass Valve" you activate this signal and addition change ramp parameters to match this setup.
All other thrusters must be set to "WO/Bypass Valve".



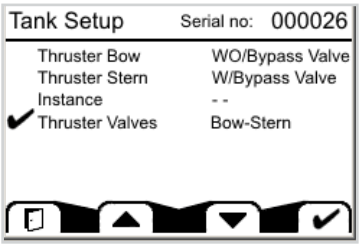
1.9 Instance
Values: --(default)/Port/Starboard

Setting the PHC024 tank controller instance. For a mono hull boat the instance should be "--". If you have a catamaran with two PHC024 controllers then the one in the port hull should be set as "Port" and the one in the starboard hull as "Starboard". This way the two controllers are shown in the panel display as two different oil tanks to monitor.



1.10 Thruster Valves (only apply for PHC024 with FW V1.105 or higher)
Values: Bow-Stern (default)/ Bow-Bow / Stern-Stern

Thruster Valves is how the two thruster valves are set to work.
Bow-Stern: One thruster valve output runs on bow signal from control device, and the other thruster valve output runs on stern signal from control device.
Bow-Bow: Both thruster valve outputs runs on bow signal from control device.
Stern-Stern: Both thruster valve outputs runs on stern signal from control device.



Menu System

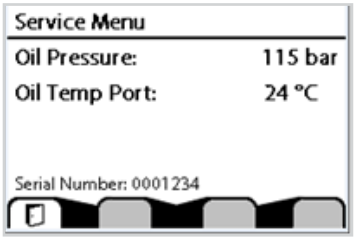
PANEL

SERVICE MENU (Systems with one oil tank)
Access SERVICE MENU by pressing MENU button

Shows oil pressure and temperature in the hydraulic tank as well as the serial number of the panel.

Thrusters can be operated while this display is shown.

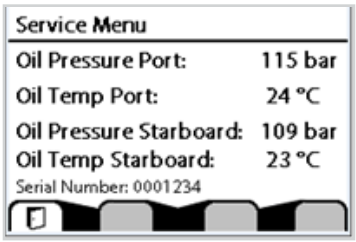
Exit Service Menu by pressing



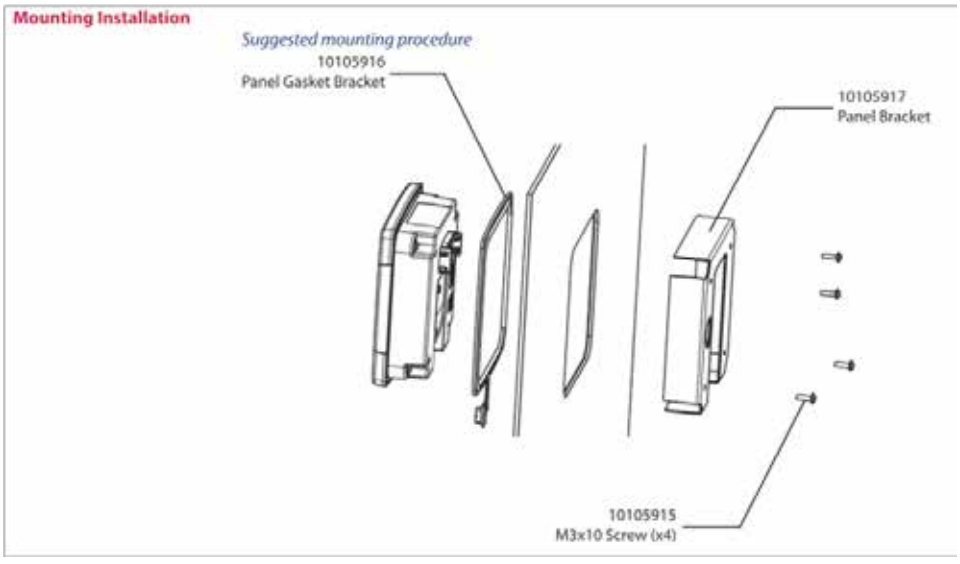
SERVICE MENU (Systems with two oil tanks)
Shows oil pressure and temperature in both hydraulic tanks as well as the serial number of the panel.

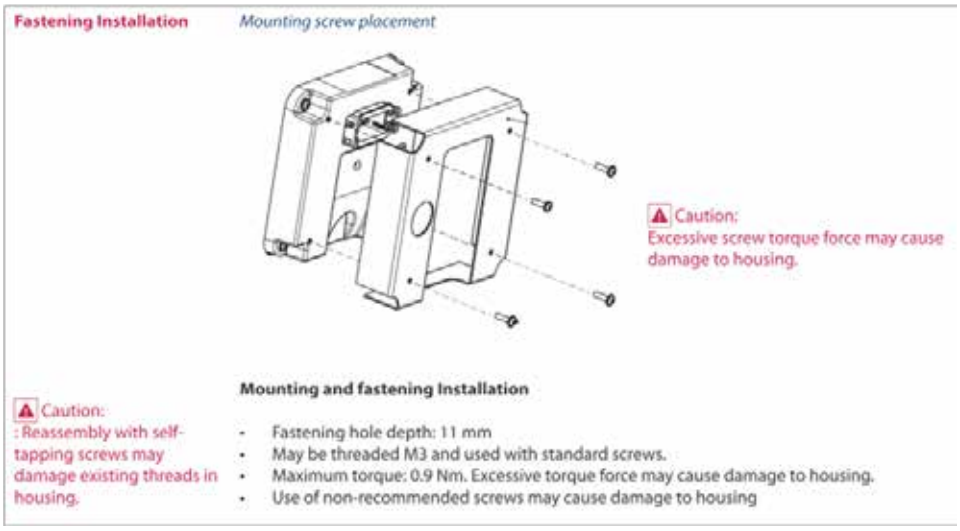
Thrusters can be operated while this display is shown.

Exit Service Menu by pressing


Service Menu
Oil Pressure Port: 115 bar
Oil Temp Port: 24 °C
Oil Pressure Starboard: 109 bar
Oil Temp Starboard: 23 °C
Serial Number: 0001234

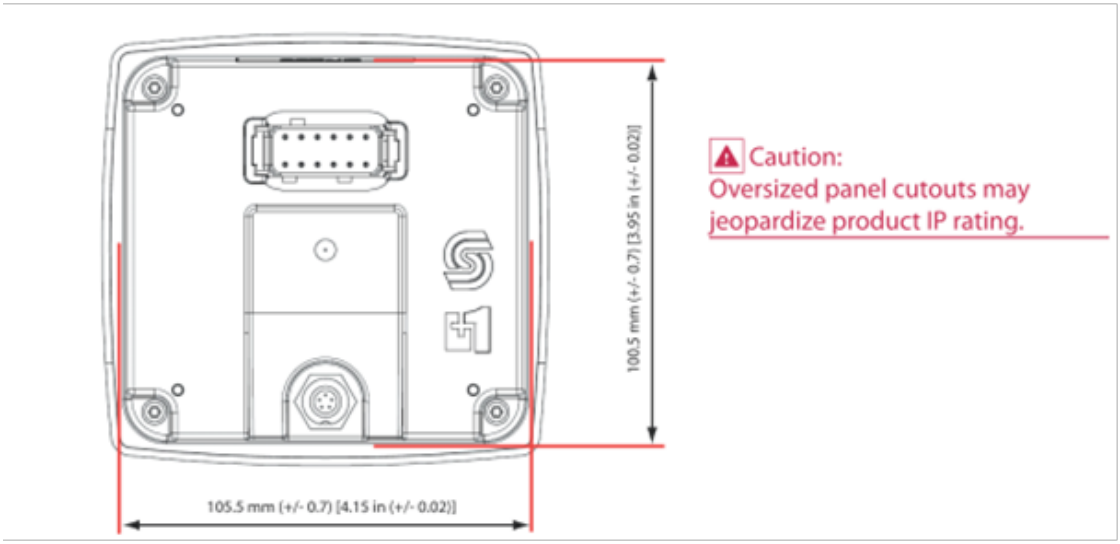
Panel mounting

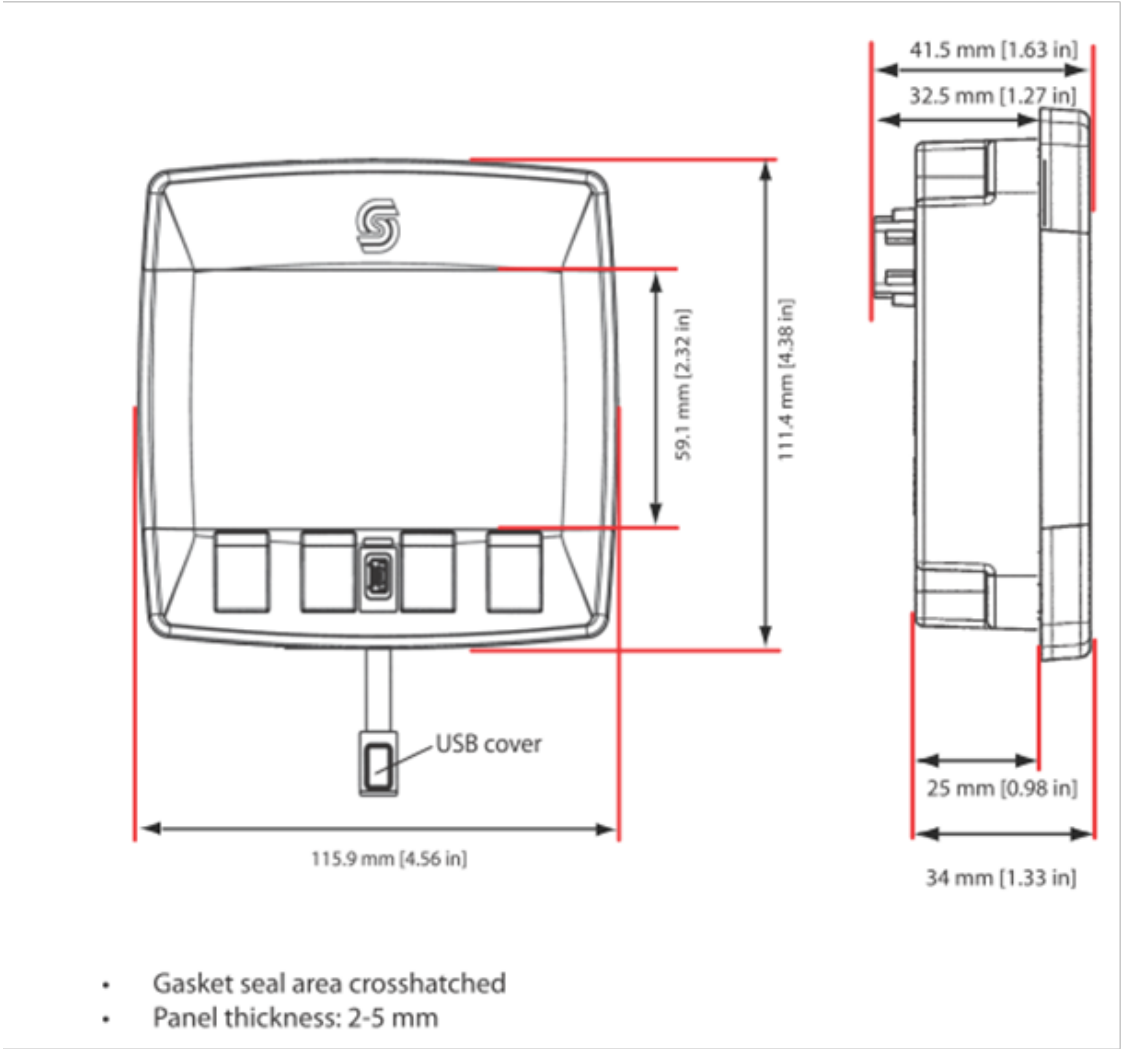



Fastening Installation
Mounting screw placement
Caution:
Excessive screw torque force may cause damage to housing.
Mounting and fastening Installation
Caution:
: Reassembly with self-tapping screws may damage existing threads in housing.
- Fastening hole depth: 11 mm
- May be threaded M3 and used with standard screws.
- Maximum torque: 0.9 Nm. Excessive torque force may cause damage to housing.
- Use of non-recommended screws may cause damage to housing

TECHNICAL SPECIFICATIONS, LCD DISPLAY:
IP 67
Low temp functionality (-40^{O}C)
Mounting bracket
Alarm output max load 200mA
Input voltage 9 - 31V
Max current consumption 110mA

Panel Dimensions

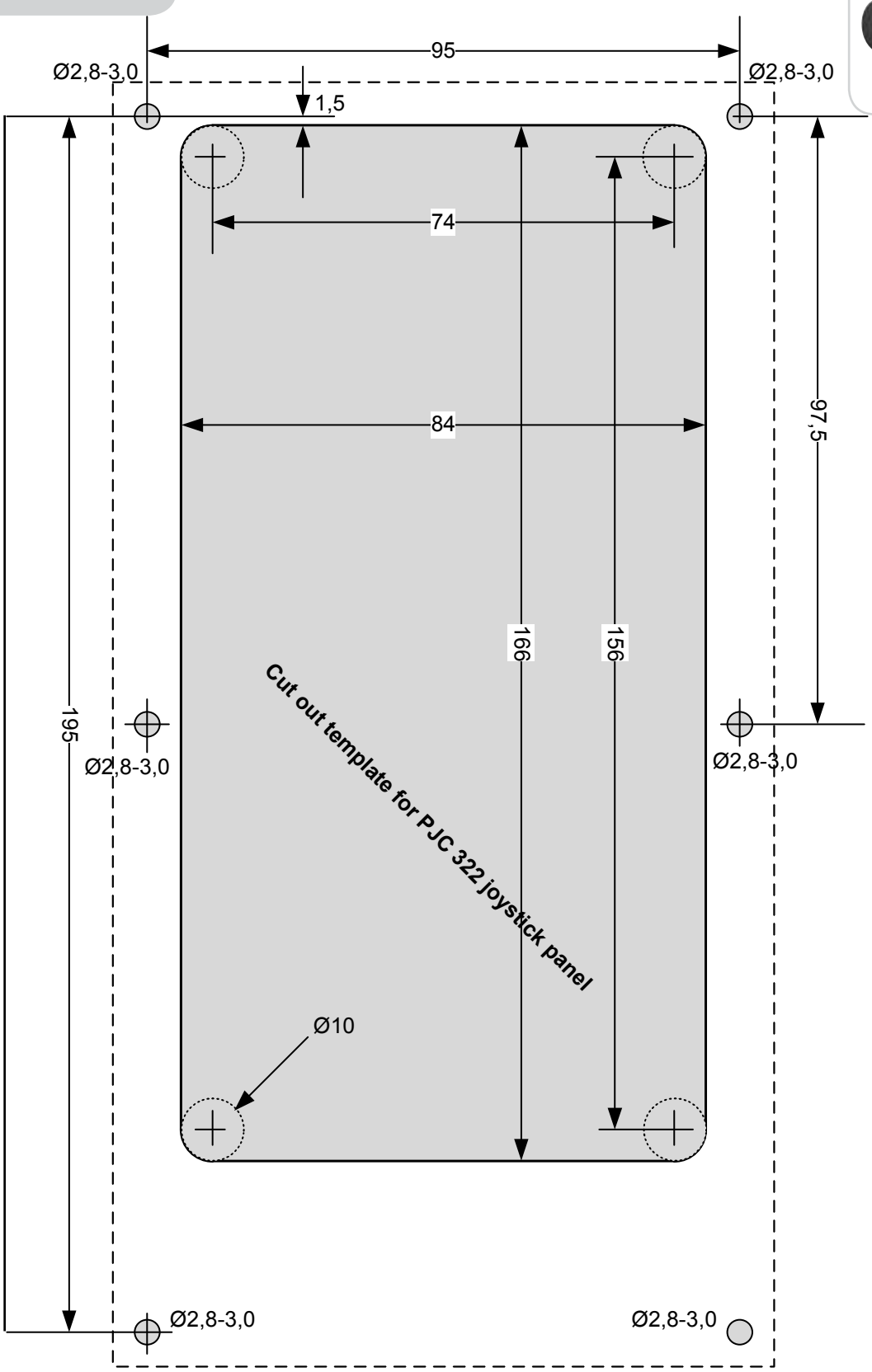




- Gasket seal area crosshatched
- Panel thickness: 2-5 mm

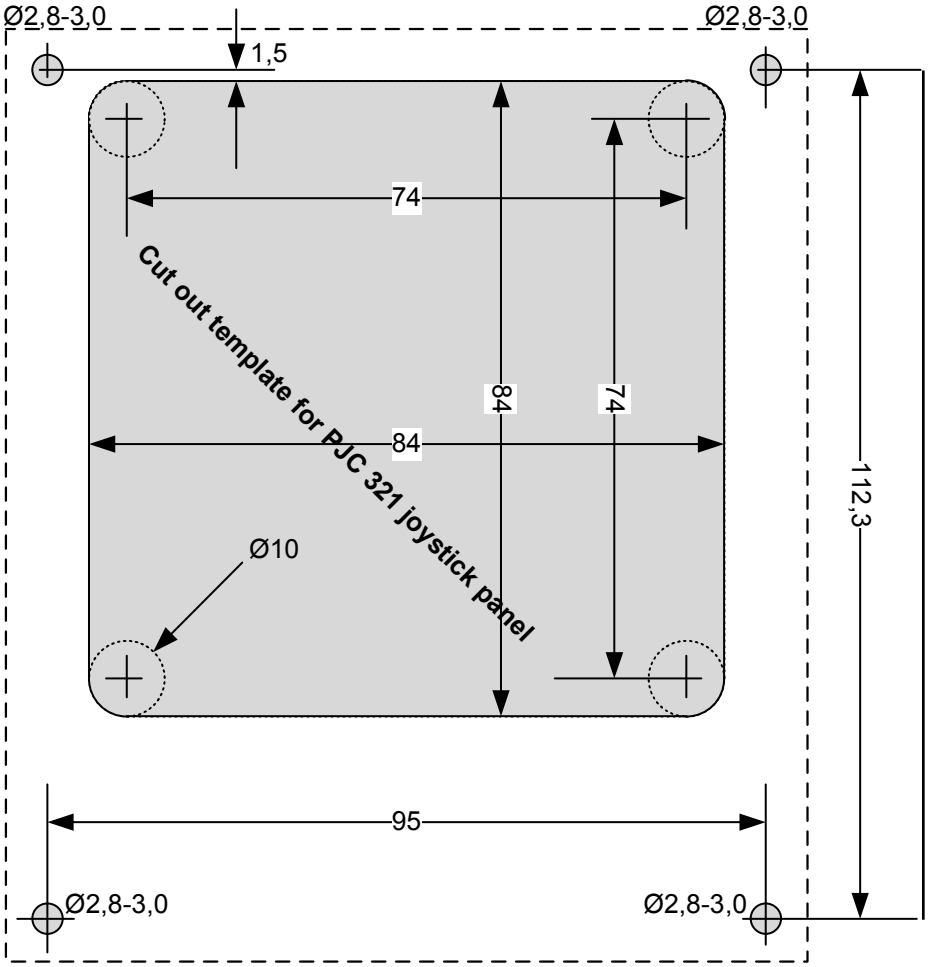
Panel Dimensions, PJC322

This wizard is for measurements use only!
Use external wizard when mounting



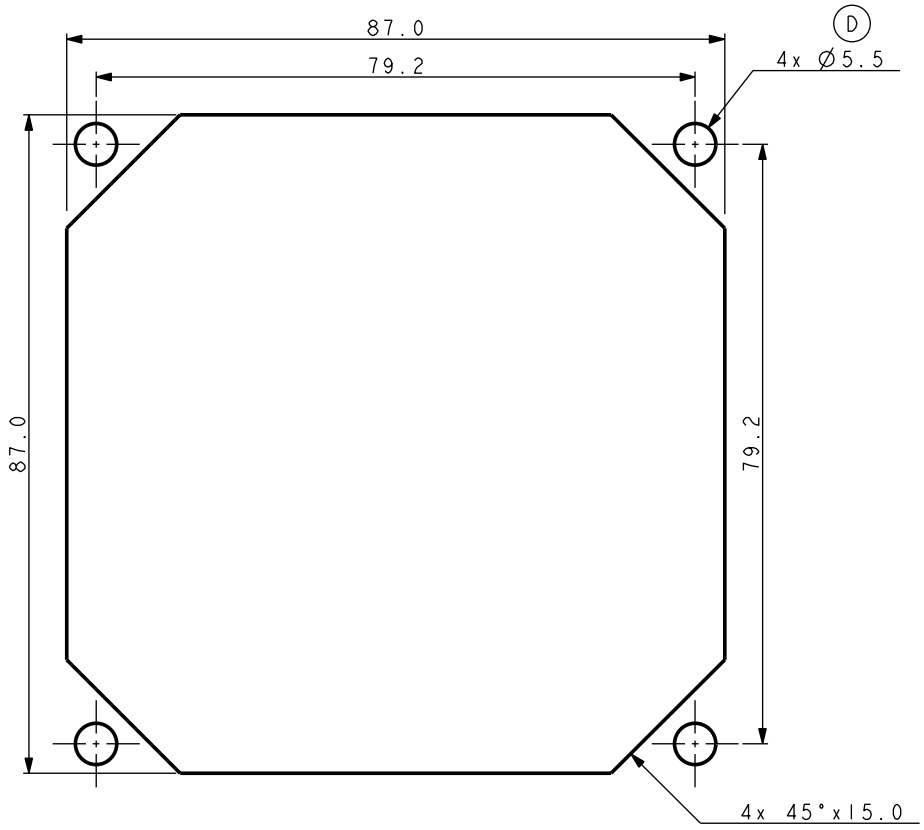
Panel Dimensions, PJC321

This wizard is for measurements use only!
Use external wizard when mounting



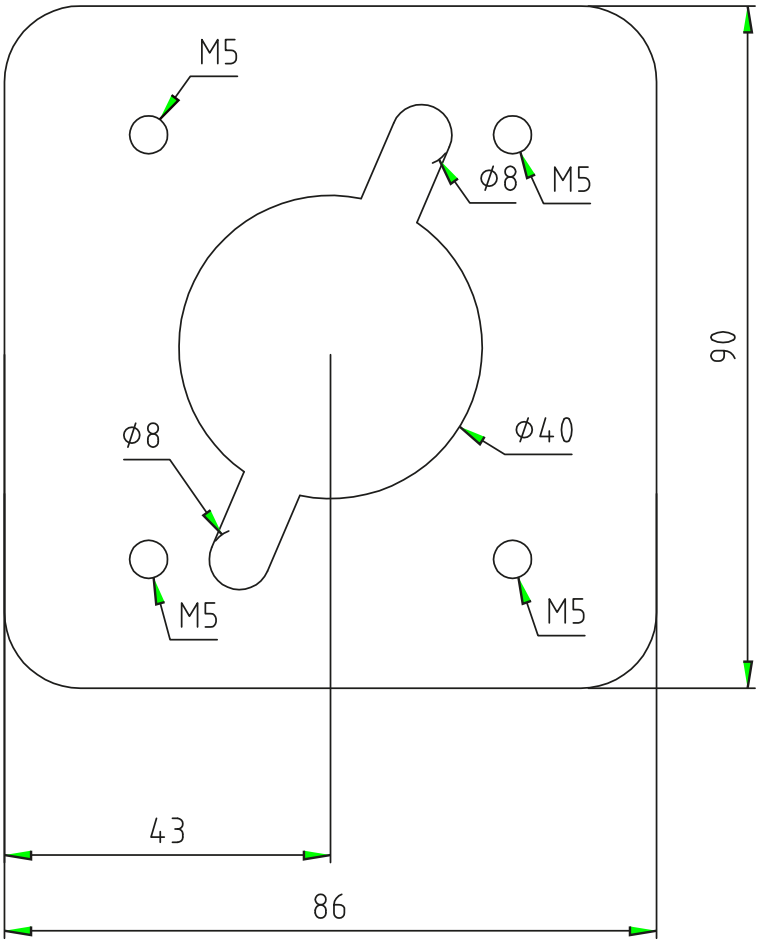
Panel Dimensions, PJC321-L, PJC322-L

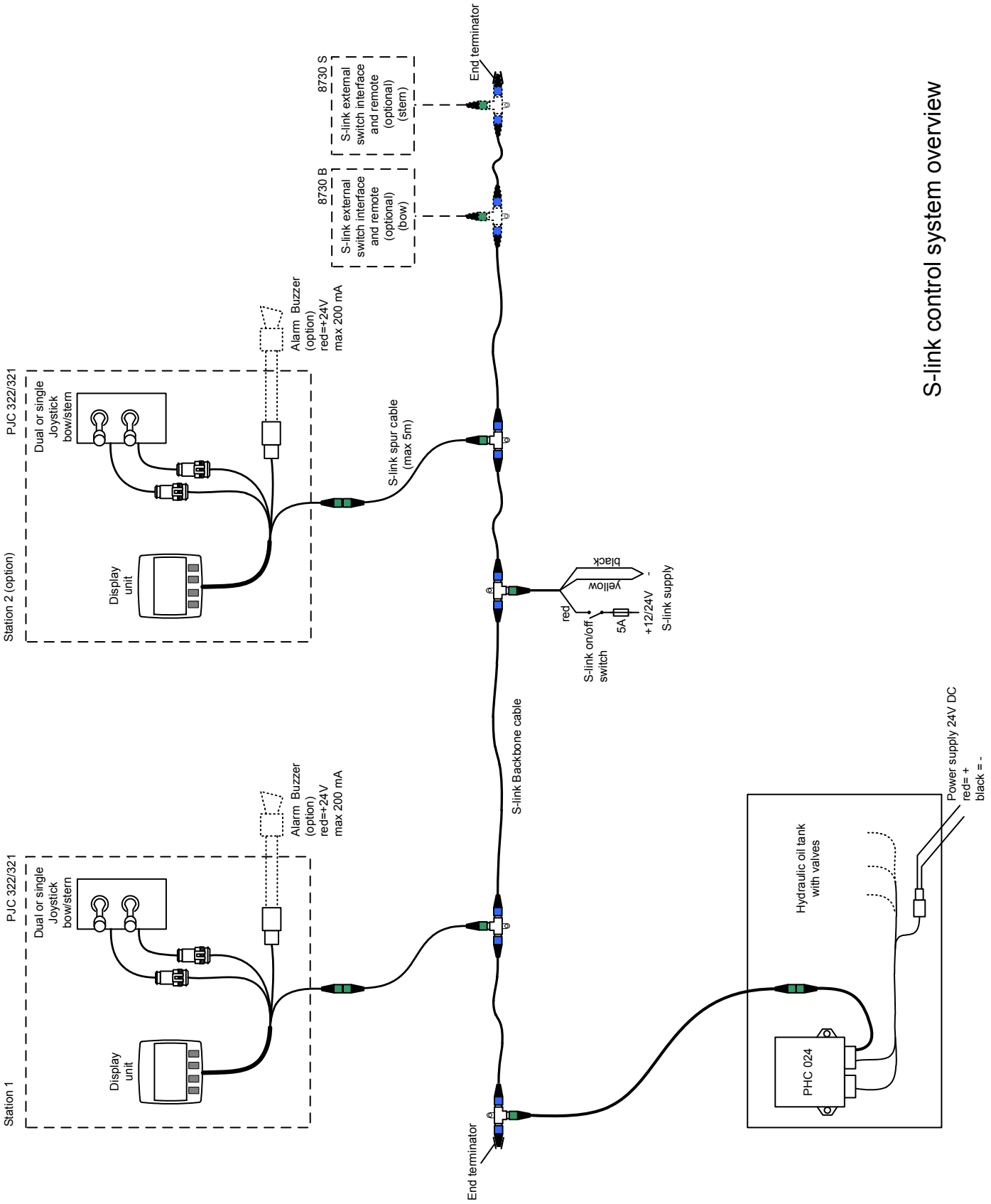
This wizard is for measurements use only!
Use external wizard when mounting



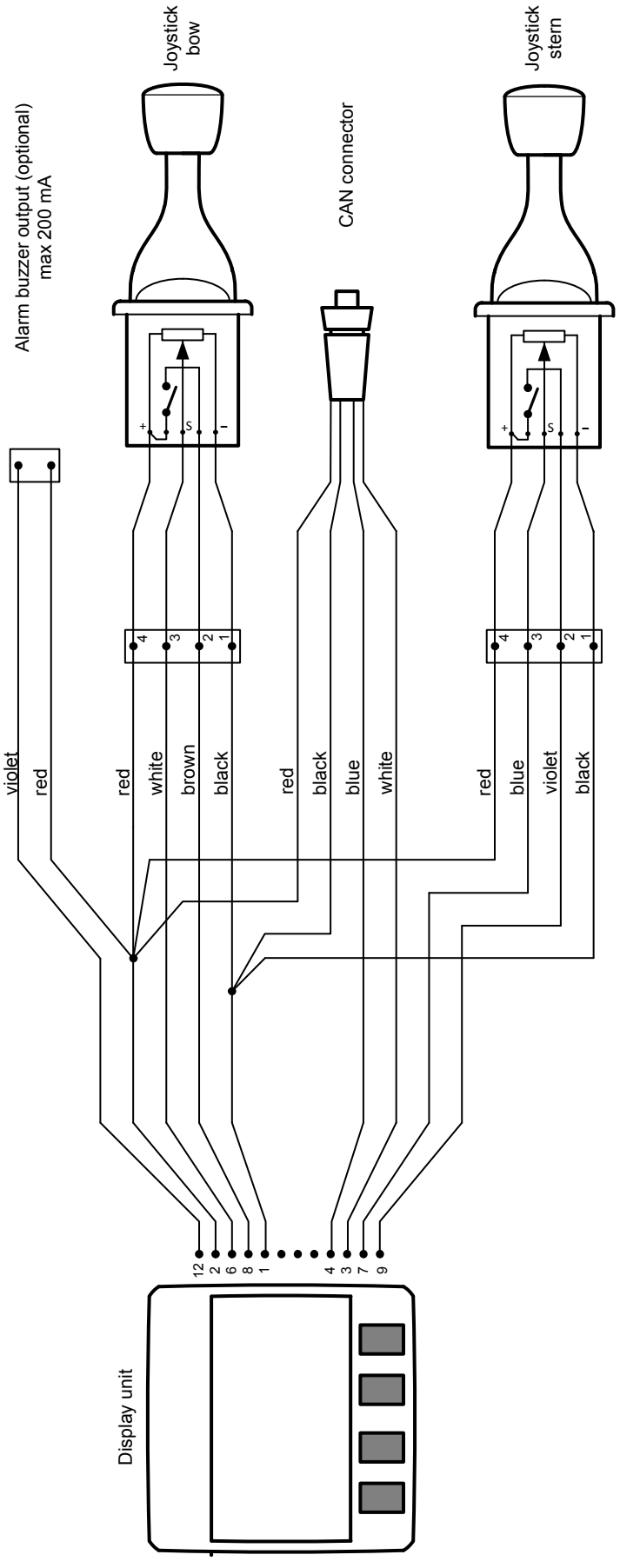
Panel Dimensions PJC321-MCL2, PJC322-MCL2

This wizard is for measurements use only!
Use external wizard when mounting



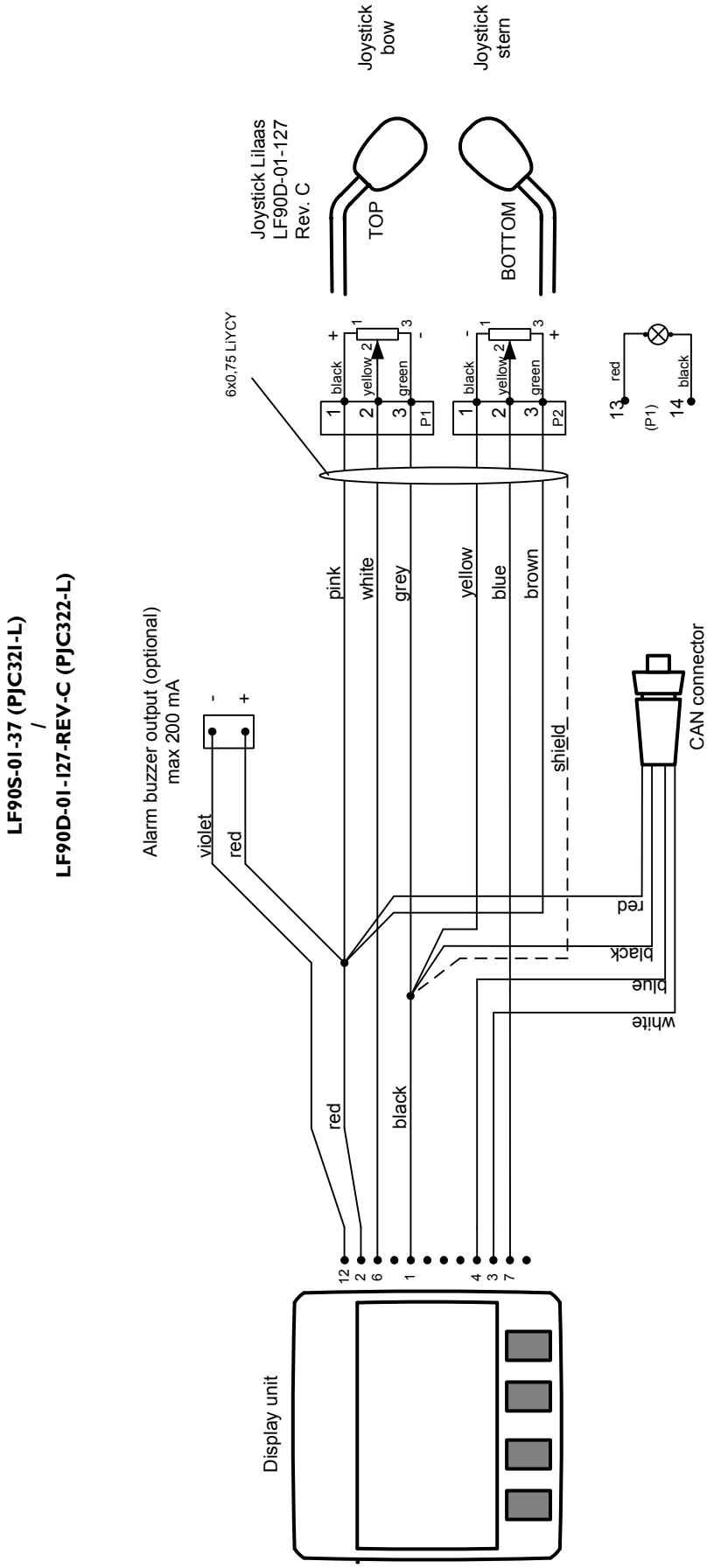

S-link control system overview
Station 1
PJC 322/321
Dual or single Joystick bow/stern
Display unit
Alarm Buzzer (option) red=+24V max 200 mA
Station 2 (option)
PJC 322/321
Dual or single Joystick bow/stern
Display unit
Alarm Buzzer (option) red=+24V max 200 mA
S-link spur cable (max 5m)
S-link Backbone cable
8730 B
S-link external switch interface and remote (optional) (bow)
8730 S
S-link external switch interface and remote (optional) (stern)
End terminator
End terminator
S-link on/off switch
red
yellow
black
5A
+12/24V
-
S-link supply
Hydraulic oil tank with valves
PHC 024
Power supply 24V DC
red= +
black = -

Internal Wiring Diagram PJC321, PJC322

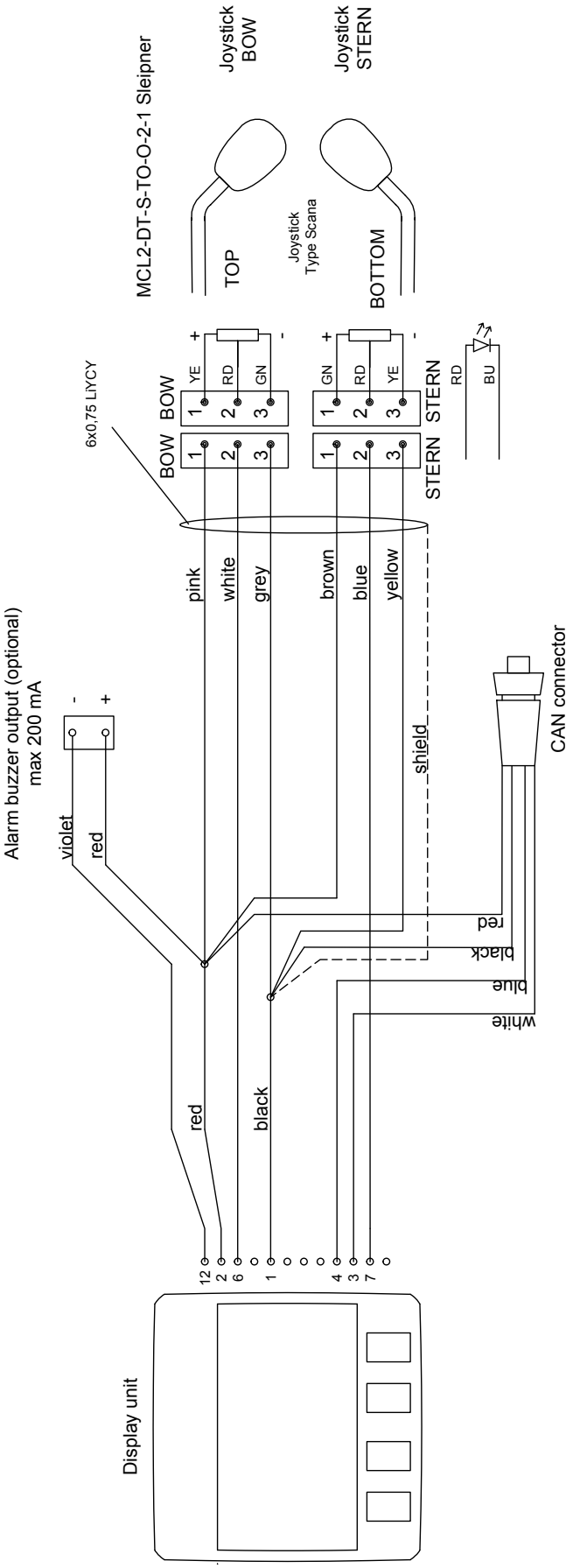


PJC 322 Internal wiring.
(PJC 321 has no joystick stem)

Internal Wiring Diagram PJC321-L, PJC322-L



Internal Wiring Diagram PJC321-MCL2, PJC322-MCL2



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